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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/549,912
Filing Date: September 20, 2005
Appellant(s): ALVAREZ AREVALO ET AL.

Chris Comuntzis (Reg. No. 31,097)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 23 February 2009 appealing from the Office action mailed 05 August 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Patent No US 6,014,694 AHARONI ET AL., January 11, 2000

Patent No US 5,534,937 ZHU ET AL., July 9, 1996

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(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aharoni et al. (Patent No US 6,014,694), hereinafter Aharoni, in view of Zhu et al. (Patent. No US 5534937), hereinafter Zhu.**

3. With respect to claim 1, Aharoni discloses A method of transmitting an encoded sequence over a network to a terminal (Aharoni, Column 2, lines 16-20), comprising
 - a. storing a plurality of encoded versions of the same sequence (Aharoni, Column 2, lines 29-32), wherein each version comprises a plurality of discrete portions of data (Aharoni, Column 2, lines 32-39; i.e. discrete portions of data = subset of levels) and each version corresponds to a respective different degree of compression (Aharoni, Column 2, lines 20-21; i.e. different degree of compression = ...the system adjusts the compression ratio);
 - b. transmitting a current one of said versions (Aharoni, Column 7, line 67, and continued through to Column 8, lines 1-3);

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- c. ascertaining the data rate permitted by the network (Aharoni, Column 11, lines 30-37);
- d. selecting one of said versions for transmission, in dependence on the results of said comparisons; and transmitting the selected version (Aharoni, Column 2, lines 60-61).

Aharoni does not disclose ascertaining the state of fullness of a receiving buffer at the terminal; for at least one candidate version, computing in respect of at least one discrete portion thereof as yet unsent the maximum value of current buffer fullness that would be needed to avoid buffer underflow were any number of portions starting with that portion to be sent at the currently ascertained permitted rate; comparing the determined maximum needed buffer fullness value(s) with the current buffer fullness state.

However, Zhu discloses ascertaining the state of fullness of a receiving buffer at the terminal (Column 3, lines 3-14; See Figure 2 also); for at least one candidate version, computing in respect of at least one discrete portion thereof as yet unsent the maximum value of current buffer fullness that would be needed to avoid buffer underflow were any number of portions starting with that portion to be sent at the currently ascertained permitted rate (Column 3, lines 3-16); comparing the determined maximum needed buffer fullness value(s) with the current buffer fullness state (Column 3, lines 16-26).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Aharoni with the teachings of Zhu in order to have an

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efficient stream selection system and increase the quality and reliability of stream transmissions by avoiding any negative effects that may result from a buffer underflow.

4. With respect to claim 2, Aharoni as modified discloses a method of transmitting an encoded sequence over a network to a terminal (Aharoni, Column 2, lines 16-20), comprising
 - e. storing a plurality of encoded versions of the same sequence (Aharoni, Column 2, lines 29-32), wherein each version comprises a plurality of discrete portions of data (Aharoni, Column 2, lines 32-39; i.e. discrete portions of data = subset of levels) and each version corresponds to a respective different degree of compression (Aharoni, Column 2, lines 20-21; i.e. different degree of compression = ...the system adjusts the compression ratio);
 - f. were any number of portions starting with that portion to be sent at the respective nominal rate (Aharoni, Column 17, lines 52-59);
 - g. transmitting a current one of said versions (Aharoni, Column 7, line 67, and continued through to Column 8, lines 1-3);
 - h. ascertaining the data rate permitted by the network (Aharoni, Column 11, lines 30-37);
 - i. selecting one of said versions for transmission, in dependence on the results of said comparisons (Aharoni, Column 2, lines 60-61); and transmitting the selected version (Aharoni, Column 2, lines 60-61).

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Aharoni does not disclose that for each version and for each of a plurality of nominal transmitting rates, computing in respect of at least one discrete portion thereof the maximum value of current buffer fullness that would be needed to avoid receiving buffer underflow at the terminal; storing said maximum needed buffer fullness values; ascertaining the state of fullness of a receiving buffer at the terminal; for at least one candidate version, using the ascertained permitted data rate and the stored maximum needed buffer fullness values to estimate a respective maximum needed buffer fullness value corresponding to said ascertained permitted data rate; comparing the estimated maximum needed buffer fullness values with the ascertained buffer state.

However Zhu discloses that for each version and for each of a plurality of nominal transmitting rates, computing in respect of at least one discrete portion thereof the maximum value of current buffer fullness that would be needed to avoid receiving buffer underflow at the terminal (Zhu, Column 3, lines 3-16); storing said maximum needed buffer fullness values (Zhu, Column 7, lines 50-63); ascertaining the state of fullness of a receiving buffer at the terminal (Zhu, Column 3, lines 3-14; See Figure 2 also); for at least one candidate version, using the ascertained permitted data rate and the stored maximum needed buffer fullness values to estimate a respective maximum needed buffer fullness value corresponding to said ascertained permitted data rate (Zhu, Column 3, lines 3-16); comparing the estimated maximum needed buffer fullness values with the ascertained buffer state (Zhu, Column 3, lines 16-26);

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It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Aharoni with the teachings of Zhu in order to have an efficient stream selection system and increase the quality and reliability of stream transmissions.

5. With respect to claim 3, it is rejected for the same reasons as claim 1 above. In addition Aharoni as modified discloses wherein maximum needed buffer fullness determination is performed (Zhu, Column 3, lines 3-14) only for selected ones of said portions at which a version change is to be permitted (Aharoni, Column 9, lines 20-26).

6. With respect to claim 4, it is rejected for the same reasons as claim 1 above. In addition Aharoni as modified discloses in which each computed needed buffer fullness (Zhu, Column 4, lines 32-41) is the difference between (a) the time needed to transmit, at the relevant rate, the portion in question and zero or more consecutive subsequent portions up to and including any particular portion (Aharoni, Column 2, lines 15-28), and (b) the difference between the playing instant of the respective particular portion and the playing instant of the portion preceding the portion in question (Aharoni, Column 17, lines 40-49).

7. With respect to claim 5, it is rejected for the same reasons as claim 1 above. In addition Aharoni as modified discloses in which the sequence is a video sequence (Aharoni, Column 17, lines 40-49).

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8. With respect to claim 6, it is rejected for the same reasons as claim 1 above. In addition Aharoni as modified discloses in which the sequence is an audio sequence (Aharoni, Column 18, lines 36-37; i.e. AVI can just be an audio sequence).

9. With respect to claim 7, Aharoni discloses a storage medium for storing a video recording (Aharoni, Column 7, lines 49-55), comprising

- j. a plurality of encoded versions of the same sequence (Aharoni, Column 2, lines 29-32), wherein each version comprises a plurality of discrete portions of data (Aharoni, Column 2, lines 32-39; i.e. discrete portions of data = subset of levels) and each version corresponds to a respective different degree of compression (Aharoni, Column 2, lines 20-21; i.e. different degree of compression = ...the system adjusts the compression ratio);
- k. and that would occur were that portion to be sent at the respective nominal rate (Aharoni, Column 17, lines 52-59);
- l. that would occur were that portion and any number of subsequent portions subsequent thereto to be sent at the respective nominal rate (Aharoni, Column 17, lines 52-59).

Aharoni does not disclose for each discrete portion of each version and for each of a plurality of nominal transmitting rates, a maximum value of current buffer fullness for that portion, being the maximum of (a) the value needed to avoid buffer underflow.

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However, Zhu discloses for each discrete portion of each version and for each of a plurality of nominal transmitting rates, a maximum value of current buffer fullness for that portion, being the maximum of (a) the value needed to avoid buffer underflow (Zhu, Column 3, lines 3-16).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Aharoni with the teachings of Zhu in order to have an efficient stream selection system and increase the quality and reliability of stream transmissions.

10. With respect to claim 8, Aharoni discloses storage medium for storing an audio recording stored (Aharoni, Column 7, lines 49-55), comprising

- m. a plurality of encoded versions of the same sequence (Aharoni, Column 2, lines 29-32), wherein each version comprises a plurality of discrete portions of data (Aharoni, Column 2, lines 32-39; i.e. discrete portions of data = subset of levels) and each version corresponds to a respective different degree of compression (Aharoni, Column 2, lines 20-21; i.e. different degree of compression = ...the system adjusts the compression ratio);
- n. and that would occur were that portion to be sent at the respective nominal rate (Aharoni, Column 17, lines 52-59);
- o. that would occur were that portion and any number of subsequent portions subsequent thereto to be sent at the respective nominal rate (Aharoni, Column 17, lines 52-59).

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Aharoni does not disclose for each discrete portion of each version and for each of a plurality of nominal transmitting rates, a maximum value of current buffer fullness for that portion, being the maximum of (a) the value needed to avoid buffer underflow.

However, Zhu discloses for each discrete portion of each version and for each of a plurality of nominal transmitting rates, a maximum value of current buffer fullness for that portion, being the maximum of (a) the value needed to avoid buffer underflow (Zhu, Column 3, lines 3-16).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Aharoni with the teachings of Zhu in order to have an efficient stream selection system and increase the quality and reliability of stream transmissions.

11. With respect to claim 9, Aharoni discloses a store (Aharoni, Column 16, lines 50-60; i.e. store = database) storing a plurality of encoded versions of the same sequence (Aharoni, Column 2, lines 29-32), wherein each version comprises a plurality of discrete portions of data (Aharoni, Column 2, lines 32-39; i.e. discrete portions of data = subset of levels) and each version corresponds to a respective different degree of compression (Aharoni, Column 2, lines 20-21; i.e. different degree of compression = ...the system adjusts the compression ratio);

p. a transmitter (Aharoni, Column 17, lines 19-21); and

q. control means operable to receive data as to the data rate permitted by the network and data as to the state of fullness of a receiving buffer at the terminal (Aharoni, Column 3, lines 65-67 continued through to Column 4, lines 1-7).

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- r. select one of said versions for transmission, in dependence on the results of said comparisons (Aharoni, Column 2, lines 60-61).

Aharoni does not disclose for at least one candidate version, compute in respect of at least one discrete portion thereof as yet unsent the maximum value of current buffer fullness that would be needed to avoid buffer underflow were any number of portions starting with that portion to be sent at the permitted rate, to compare the determined maximum needed buffer fullness value(s) with the current buffer fullness state.

However, Zhu discloses for at least one candidate version, compute in respect of at least one discrete portion thereof as yet unsent the maximum value of current buffer fullness that would be needed to avoid buffer underflow were any number of portions starting with that portion to be sent at the permitted rate (Column 3, lines 3-16), to compare the determined maximum needed buffer fullness value(s) with the current buffer fullness state (Column 3, lines 16-26).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Aharoni with the teachings of Zhu in order to have an efficient stream selection system and increase the quality and reliability of stream transmissions.

12. With respect to claim 10, Aharoni as modified discloses a store (Aharoni, Column 16, lines 50-60; i.e. store = database) storing a plurality of encoded versions of the same sequence (Aharoni, Column 2, lines 29-32), wherein each version comprises a plurality of discrete portions

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of data (Aharoni, Column 2, lines 32-39; i.e. discrete portions of data = subset of levels) and each version corresponds to a respective different degree of compression (Aharoni, Column 2, lines 20-21; i.e. different degree of compression = ...the system adjusts the compression ratio), were any number of portions starting with that portion to be sent at the respective nominal rate (Aharoni, Column 17, lines 52-59);

- s. a transmitter (Aharoni, Column 17, lines 19-21); and
- t. control means for receiving data as to the data rate permitted by the network and data as to the state of fullness of a receiving buffer at the terminal (Aharoni, Column 3, lines 65-67 continued through to Column 4, lines 1-7).
- u. select one of said versions for transmission, in dependence on the results of said comparisons (Aharoni, Column 2, lines 60-61).

Aharoni does not disclose for each version including, for each of a plurality of nominal transmitting rates, computing in respect of at least one discrete portion thereof the maximum value of current buffer fullness that would be needed to avoid receiving buffer underflow at the terminal; for at least one candidate version, to use the permitted data rate and the stored maximum needed buffer fullness values to estimate a respective maximum needed buffer fullness value corresponding to said permitted data rate, to compare the estimated maximum needed buffer fullness values(s) with the buffer fullness state.

However Zhu discloses that for each version including, for each of a plurality of nominal transmitting rates, computing in respect of at least one discrete portion thereof the maximum

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value of current buffer fullness that would be needed to avoid receiving buffer underflow at the terminal (Zhu, Column 3, lines 3-16); for at least one candidate version, to use the permitted data rate and the stored maximum needed buffer fullness values to estimate a respective maximum needed buffer fullness value corresponding to said permitted data rate (Column 3, lines 3-16), to compare the estimated maximum needed buffer fullness values(s) with the buffer fullness state (Column 3, lines 16-26).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Aharoni with the teachings of Zhu in order to have an efficient stream selection system and increase the quality and reliability of stream transmissions.

(10) Response to Argument

The examiner summarizes the various points raised by the appellant and addresses the replies individually.

1. On Page 14, Appellant argues that “*Zhu does not disclose or suggest (i) "for at least one candidate version, computing in respect of at least one discrete portion as yet unsent the maximum value of buffer fullness that would be needed to avoid buffer overflow were any number of portions starting with that portion to be sent at the currently ascertained permitted rate," or (ii) "comparing the determined maximum needed buffer fullness value(s) with the current buffer fullness state," as required by claim 1*”.

In reply, to applicant's arguments that “*Zhu does not disclose or suggest (i) "for at least one candidate version*” the examiner respectfully points out to applicant's, that as admitted by the applicant's on page 16 of the instant arguments “. . . since of course **in Zhu's case there is only**

_____. The applicant's have admitted that Zhu teaches the "for **at least one candidate version**", which the examiner agrees with applicant that Zhu does disclose that there is only one candidate version. Which as disclosed by applicant's in their claim there has to be **at least one candidate version**, which Zhu satisfies.

Furthermore, applicant's contends that Zhu does not disclose "*computing in respect of at least one discrete portion as yet unsent the maximum value of buffer fullness that would be needed to avoid buffer overflow were any number of portions starting with that portion to be sent at the currently ascertained permitted rate,*" or (ii) "*comparing the determined maximum needed buffer fullness value(s) with the current buffer fullness state*". However, Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. Applicant's cited to Zhu, Column 5, lines 1-18 to show how the language of the claims patentably distinguishes them from the references. However, the examiner never cited to Column 5, lines 1-18 to teach applicant's limitation of "*computing in respect of at least one discrete portion as yet unsent the maximum value of buffer fullness that would be needed to avoid buffer overflow were any number of portions starting with that portion to be sent at the currently ascertained permitted rate,*" or (ii) "*comparing the determined maximum needed buffer fullness value(s) with the current buffer fullness state*". The examiner respectfully directs applicant's to the cited portion as disclosed in the office action Zhu, Column 3, lines 3-16 which reads on applicants limitation of "*computing in respect of at least one discrete portion as yet unsent the maximum value of buffer fullness that would be needed to avoid buffer overflow were any number of portions starting with that portion to be sent*".

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at the currently ascertained permitted rate," and Zhu , Column 3, lines 16-26 which reads on applicants limitation of "comparing the determined maximum needed buffer fullness value(s) with the current buffer fullness state".

2. On Page 15, Appellant further argues that Zhu at Column 5, lines 1-18 *"highlights a difference between Zhu and Appellant's invention which is that Appellant's invention is aiming to avoid underflow, whereas Zhu is trying to avoid overflow. To be sure, Zhu mentions in column 3, lines 8- 11 that overflow or underflow may occur if steps are not taken to prevent them, but then goes on to observe at column 3, lines 26-30 that underflow is rare and not a severe problem, and in fact does not propose any steps to prevent underflow. So the most that Zhu may be said to teach in relation to underflow is that it can occur if no countermeasures are taken to prevent it; Zhu is silent on which countermeasures one might use"*.

In reply, to applicant's arguments that Zhu at Column 5, lines 1-18 discloses that *"Zhu is trying to avoid overflow"*. The examiner agrees with applicant's, that *"Zhu mentions in column 3, lines 8- 11 that overflow or underflow may occur if steps are not taken to prevent them, but then goes on to observe at column 3, lines 26-30 that underflow is rare and not a severe problem"* and Zhu at Column 5, lines 1-18, discloses methods on how to avoid overflow. However, the examiner is not and did not rely on Zhu Column 5, lines 1-18 to teach underflow. Furthermore, the examiner disagrees with applicant's mischaracterization and contention that *"the most that Zhu may be said to teach in relation to underflow is that it can occur if no countermeasures are taken to prevent it; Zhu is silent on which countermeasures one might use"*. The examiner would like to refer applicant's to Zhu Column 3, lines 26-28, which discloses that *"buffer underflow may*

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occur because of delay jitter”. Zhu then goes on to explain that their invention smoothes delay jitter (column 3 lines 40-41), and discloses an in depth procedure, which includes computing buffer fullness, that smoothes and solves the delay jitter problem (column 3 line 59 - column 4 line 47). So it is clearly shown by Zhu that solving delay jitter will in turn solve a buffer underflow that may result from delay jitter.

3. On Page 17, Appellant further argues that *“The inventions of independent claims 2, 7, 8 and 10 differ from claim 1 in that instead of performing the whole computation for the particular current permitted data rate, these claims calculate the buffer fullness values in advance "for each of a plurality of nominal transmitting rates" and use these to estimate the value for the actual rate once this has been ascertained, thereby reducing the amount of processing that has to be performed in real time.”*

In reply, to applicant's arguments, the examiner states that applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Marshall M. McLeod/
5/14/2009

CONFEREES:

/Ramy M Osman/

Primary Examiner, Art Unit 2457

/ARIO ETIENNE/

Supervisory Patent Examiner, Art Unit 2457